```
          10        20        30        40        50        60        70
GGAGGTATAGGAGCTCTCTTCGATTTAGCAAACCAGGAGTCCGAAGATCTAAGGAGAGCTGGGGGTTTGACTCC
          SacI                                  BglII
          85        95        105       115       125       135       145
GAGAGCTCGAGCAGTCCCCAAGACCTGGTCTTGACTCACGAGTTAGACTCCACTCAGAGGCTGACTGTCTCCAGG
  SacI          PflMI
     XhoI           Tth111I
           160       170       180       190       200       210       220
GTCTACACCTCTAAGGGCGACACTGGGCTCAAGCAGACTGCCGTTTTCTATATGGGATGAGCCTTCACAGGGCAG
           235       245       255       265       275       285       295
CCAGTTGGGATGGGTTGAGGTTTGGCTGTAGACATCAGAAACCCAAGTCAAATGCGCTTCAACCAGTAGAAAATT
           310       320       330       340       350       360       370
CACCAGCCCGCAGAGCTAAGGTTGGGTGGACATTAGGGTTGGTTGATCCAGGAGCTCAACAGTGTCCTCTGAGCC
                                                   SacI
           385       395       405       415       425       435       445
CCAGCTCCTTCTGCCCCACCCCACCATCTTCAGTGCTGCTTCCTCTCAAGGCCACAGCTGTAGTTGGCCAGGGGG
                                                      PvuII     BalI
                                                                  BglI
           460       470       480       490       500       510       520
GCTTCATTATTTTTTGCTCCTGGGCAGTAGGAGGAAGAGAATGAATGTCTCTCCATGGGTCTTTCTTAGGAATGT
                                                    NcoI
           535       545       555       565       575       585       595
GGGAACTTTTTCCAGAAGTCTCTATGTCTTTTAGTTTGTGTTGGGTCACTTGCCCTTCCTGAACCACTTCCTGAC
           610       620       630       640       650       660       670
TCCTGGACAGGATGTGCACTGATGAGCTTAGCTTTGGGGATCTAATAGTGACTTTACAAAGCCTCTTTGAGAAGG
              ApaLI       EspI
           685       695       705       715       725       735       745
TGACATTGGAACCAAGGCTTGAGCAGACACAACAAAGATTGCAGGGAGGGGCATTGCAGGTGGAGGAAACGGCAC
                                                       BspMI-
           760       770       780       790       800       810       820
ATGCAAGAGCCCTGCGTGGGAGTGAGCTTGGTGTTTGGTCAATCAGTTGTCAGAGCACACCGGGCCCTGTCAGCA
                                                            ApaI
                                                            EcoO
```

Fig. 1A-1

```
        835       845       855       865       875       885       895
GGCACAGCCTGGGCCTGCTCTGAGTATGACAGAGAGCCCCTGGGAAGTTGTAGGTGGAGGAAAGACAGGTCATGA
         910       920       930       940       950       960       970
CTAGGAAAAAAGCAATCCCTCTGTTGTGGGGTGGAAGGAAGGTTGCAGTGTGTGTGAGAGAGAGACAAGACAGAC
        985       995      1005      1015      1025      1035      1045
AGACAGACACTTCTCAATGTTTACAAGTGCTCAGGCCCTGACCCGAATGCTTCCAAATTTACGTAGTTCTGGAAA
                                EcoO        BsmI+         SnaBI
       1060      1070      1080      1090      1100      1110      1120
ACCCCCTGTATCATTTTCACTACTCAAAGAAACCTCGGGAGTGTTTTCTTCTGAAAGGTCATCAGGTTTTGACTC
       1135      1145      1155      1165      1175      1185      1195
TCTGCTGTCTCATTTCTTCTTGCTGGTGGTGGTGATGGTTGCTTGTCCCAGGCCCTGTCCCGCATCCTCTTGCCC
                                                     EcoO
       1210      1220      1230      1240      1250      1260      1270
CTGCAGAGGGATGAGTGTGTTGGGGCCTCACGAGTTGAGGTTGTTCATAAGCAGATCTCTTTGAGCAGGGCGCCT
PstI                EcoO                                BglII          NarI Ps
       1285      1295      1305      1315      1325      1335      1345
GCAGTGGCCTTGTGTGAGGCTGGAGGGGTTTCGATTCCCTTATGGAATCCAGGCAGATGTAGCATTTAAACAACA
tI                                                                 DraI
       1360      1370      1380      1390      1400      1410      1420
CACGTGTATAAAAGAAACCAGTGTCCGCAGAAGGTTCCAGAAAGTATTATGGGATAAGACTACATGAGAGAGGAA
       1435      1445      1455      1465      1475      1485      1495
TGGGGCATTGGCACCTCCCTTAGTAGGGCCTTTGCTGGGGGTAGAAATGAGTTTTAAGGCAGGTTAGACCCTCGA
                      EcoO                                   BspMI-
       1510      1520      1530      1540      1550      1560      1570
ACTGGCTTTTGAATCGGGAAATTTACCCCCCAGCCGTTCTGTGCTTCATTGCTGTTCACATCACTGCCTAAGATG
       1585      1595      1605      1615      1625      1635      1645
GAGGAACTTTGATGTGTGTGTGTTTCTTTCTCCTCACTGGGCTCTGCTTCTTCACTTCCTTGTCAATGCAGAGAA
       1660      1670      1680      1690      1700      1710      1720
CAGCAGCAGGCACCAGAGGCAGGCCTTGTAAGAAGCACGAGCTGTATGTCAGCTTCCGAGACCTGGGCTGGCAGG
                    StuI                                                BspMI
       1735      1745      1755      1765      1775      1785      1795
TAAGGGGCTGGCTGGGTCTGTCTTGGGTGTGGCCCTCTGGCGTGGGCTCCCACAGGCAGCGGGTGCTGTGCTCA
                         ApaI
                         EcoO
```

Fig. 1A-2

Fig. 1A-3

```
          1810      1820      1830      1840      1850      1860      1870
GTCTTGTTTCTCATCTCTGCCAGTTAAGACTCCAGTATCAAGTGGCCTCGCTAGGGAAGGGTACTTGGCTAAGGA
          1885      1895      1905      1915      1925      1935      1945
TACAGGG.......(APPROX. 1000 BASES)............GGGAGCCAGCATGGGTGATGCCATTATGA
          1960      1970      1980      1990      2000      2010      2020
GTTATTAGCCTCTCTGGCAGGTGGGCAAACCGAGGCATGGAGGTTTGTTTAAGGTGAACTGCCAGTGTGTGACCA
       BglI      BspMI-                                                  Dr
                                                                        Pfl
          2035      2045      2055      2065      2075      2085      2095
CCTAGTGGGGTAGAGCTGATGATTGCCTCACACCGGAGCTCCTTCCTGTGCCGCGTTCTGTCCAGAAGACACAGC
aIII                                   SacI                                N
MI
          2110      2120      2130      2140      2150      2160      2170
CATGGATGTCCATTTTAGGATCAGCCAAGCCCCGTCTTGTCCTTCATTTTTATTTTATGTTTTTTTAGAAATGGG
coI
          2185      2195      2205      2215      2225      2235      2245
GTCTTGCTCTGTCACCCAGGCTGGGTGCAGTGGTGTGATCATAGCTCACCGCAGCTTTGACGCCGTCTTCCCACT
                                                            Tth111I
          2260      2270      2280      2290      2300      2310      2320
CAGTCTACTAAGCTTGGACTATAGGCCAAGACTATAGAGTGGTCCTTCTTTCCATTCTTTTGGGACCATGAGAGG
        HindIII                                         BstXI
          2335      2345      2355      2365      2375      2385      2395
CCACCCATGTTTCCTGCCCCTGCTGGGCCCTGCTGCTCAGAAGGCATGGTCTGAGGCTTTCACCTTGGTCGTGAG
                         ApaI
                         EcoO
          2410      2420      2430      2440      2450      2460      2470
CCTTCGTGGTGGTTTCTTTCAGCATGGGGTTGGGATGCTGTGCTCAGGCTTCTGCATGGTTTCCCACACTCTCTT
          2485      2495      2505      2515      2525      2535      2545
CTCCTCCTCAGGACTGGATCATCGCGCCTGAAGGCTACGCGCGCTACTACTGTGAGGGGGAGTGTGCCTTCCCTC
    MstII                                BssHII
          2560      2570      2580      2590      2600      2610      2620
TGAACTCCTACATGAACGCCACCAACCACGCCATCGTGCAGACGCTGGTGGGTGTCACGCCATCTTGGGGTGTGG
                                                                          Bs
          2635      2645      2655      2665      2675      2685      2695
TCACCTGGGCCGGGCAGGCTGCGGGGCCACCAGATCCTGCTGCCTCCAAGCTGGGGCCTGAGTAGATGTCAGCCC
tEII   BglI                                      EcoO
```

```
        2710      2720      2730      2740      2750      2760      2770
ATTGCCATGTCATGACTTTTGGGGGCCCCTTGCGCCGTTAAAAAAAATCAAAAATTGTACTTTATGACTGGTTT
                      ApaI
                     EcoO
          2785      2795      2805      2815      2825      2835      2845
GGTATAAAGAGGAGTATAATCTTCGACCCTGGAGTTCATTTATTTCTCCTAATTTTTAAAGTAACTAAAAGTTGT
                                                      DraI
        2860      2870      2880      2890      2900      2910      2920
ATGGGCTCCTTTGAGGATGCTTGTAGTATTGTGGGTGCTGGTTACGGTGCCTAAGAGCACTGGCCCCTGCTTCA
                                                            ApaI
                                                            EcoO
        2935      2945      2955      2965      2975      2985      2995
TTTTCCAGTAGAGGAAACAGGTAAACAGATGAGAAATTTCAGTGAGGGGCACAGTGATCAGAAGCGGGCCAGCAG
        3010      3020      3030      3040      3050      3060      3070
GATAATGGGATGGAGAGATGAGTGGGGACCCATGGCCATTTCAAGTTAAATTTCAGTCGGGTCACCAGGAAGAT
                         EcoO NcoI                         BstEII
        3085      3095      3105      3115      3125      3135      3145
TCCATGTGATAATGAGATTAACGTGCCCAGTCACGGCGACACTCAGTAGGTGTTATTCCTGCTCTGCCAACAGCA
        3160      3170      3180      3190      3200      3210      3220
ACCATAGTTGATAAGAGCTGTTAGGGATTTTGTCCTTTTGCTTAGAATCCAAGGTTCAAGGACCTTGGTTATGTA
                                                         EcoO
        3235      3245      3255      3265      3275      3285      3295
GCTCCCTGTCATGAACATCATCTGAGCCTTTCCTGCCTACTGATCATCCACCCTGCCTTGAATGCTTCTAGTGAC
                                                         BsmI+
        3310      3320      3330      3340      3350      3360      3370
AGAGAGCTCACTACCAGGACTACTCCCTCCTTTCATTTAGTAATCTGCCTCCTTCTTTTCTTGTCCCTGTCCTGT
  SacI
        3385      3395      3405      3415      3425      3435      3445
GTGTTAAGTCCTGGAGAAAAATCTCATCTATCCCTTTCATTTGATTCTGCTCTTTGAGGGCAGGGGTTTTTGTTT
        3460      3470      3480      3490      3500      3510      3520
CTTTGTTTGTTTTTTTAAGTGTTGGTTTTCCAAAGCCCTTGCTCCCCTCCTCAATTGAAACTTCAAAGCCCTCAT
        3535      3545      3555      3565      3575      3585      3595
TGGGATTGAAGGTCCTTAGGCTGGAAACAGAAGAGTCCTCCCCAACCTGTTCCCTGGCCTGGATGTGCTGTGCTG
        EcoOMstII
```

Fig. 1A-4

```
        3610      3620      3630      3640      3650      3660      3670
TGCCAGTATCCCCTGGAAGGTGCCAGGCATGTCTCCCCGGCTGCCAGGGGACACATCTCTATCCTTCTCCAACCC
        3685      3695      3705      3715      3725      3735      3745
CTGCCTTCATGGCCCATGGAACAGGAGTGCCATCGCCCTGTGTGCACCTACTTCCATCAGTATTTCACCAGAGAT
  BglI       NcoI                        ApaLI                            BglI
          3760      3770      3780      3790      3800      3810      3820
CTGCAGGATCAAAGTGAATTCTCCAGGGATTGTGAAATGATGCGATTGTGGTCATGTTTAAAAGGGGGCAACTGT
I              EcoRI                                         DraI
PstI
        3835      3845      3855      3865      3875      3885      3895
CTTCTAGAGAGTCCTGATGAAATGCTTCCAGAGGAAATGAGCTGATGGCTGGAATTTGCTTTAAAATCATTCAAG
  XbaI                                                          DraI
        3910      3920      3930      3940      3950      3960      3970
GTGGAGCAGGTGGGGAAGGGTATGGATGTGTAAGAGTTTGAAATTGTCCATCATAAAATGTGTAAAAAGCATGCT
     BspMI-                                                             SphI
        3985      3995      4005      4015      4025      4035      4045
GGCCTATGTCAGCAGTCACAGCCTGGAGGTGGTAACAGAGTGCCAGTCACTGATGCTCAAGCCTGGCACCTACAG
        4060      4070      4080      4090      4100      4110      4120
TTGCTGGAAACCCAGAAGTTTCACGTTGAAAACAACAGGACAGTGGAATCTCTGGCCCTGTCTTGAACACGTGGC
        4135      4145      4155      4165      4175      4185      4195
AGATCTGCTAACACTGATCTTGGTTGGCTGCCGTCAGCTTAGGTTGAGTGGCGGTCTTCCCTTAGTTTGCTTAGT
BglII
        4210      4220      4230      4240      4250      4260      4270
CCCCGCTATTCCCTATTGTCTTACCTCGGTCTATTTTGCTTATCAGTGGACCTCACGAGGCACTCATAGGCATTT
        4285      4295      4305      4315      4325      4335      4345
GAGTCTATGTGTCCCTGTCCCACATCCTCTGTAAGGTGCAGAGAAGTCCATGAGCAAGATGGAGCACTTCTAGTG
        4360      4370      4380      4390      4400      4410      4420
GGTCCAAGTCAGGGACACTATTCAGCAATCTACAGTGCACAGGGCAGTTCCCCAACAGAGAATTACCTGGTCCTG
                                   ApaLI
        4435      4445      4455      4465      4475      4485      4495
AATGTCGGATCTGGCCCCTTCCTTCCCCACTGTATAATGTGAAAACCTCTATGCTTTGTTCCCCTTGTCTGCAAA
        4510      4520      4530      4540      4550      4560      4570
ACAGGGATAATCCCAGAACTGAGTTGTCCATGTAAAGTGCTTAGAACAGGGAGTGCTTGGCTTGGGGAGTGTCAC
                                                                          Bs
```

Fig. 1A-5

```
        4585      4595      4605      4615      4625      4635      4645
CTGCAGTCATTCATTATGCCCAGACAGGATGTTTCTTTATAGAAACGTGGAGGCCAGTTAGAACGACTCACCGCT
pMI+
PstI
        4660      4670      4680      4690      4700      4710      4720
TCTCACCACTGCCCATGTTTTGGTGTGTGTTTCAGGTCCACTTCATCAACCCGGAAACGGTGCCCAAGCCCTGCT
            PflMI
        4735      4745      4755      4765      4775      4785      4795
GTGCGCCCACGCAGCTCAATGCCATCTCCGTCCTCTACTTCGATGACAGCTCCAACGTCATCCTGAAGAAATACA
        4810      4820      4830      4840
GAAACATGGTGGTCCGGGCCTGTGGCTGCCACTAGCTCCTCCGA
```

Fig. 1A-6

Title: Osteogenic Devices
Inventors: Oppermann et al.
Serial No.: Not yet assigned
Atty. Docket No.: STK-010C3
Atty.: Diana M. Steel
Express Mail Mailing Label No.: EV 093438159US
SHEET 7 OF 30


```
CONSENSUS PROBE   20         30         40         50         60         70
GATCCTAATGGGCTGTACGTGGACTTCCAGCGCGACGTGGGCTGGGACGACTGGATCATCGCCCCCGTCG
      **                      ** *** ********   ************** **
TGTAAGAAGCACGAGCTGTATGTCAGCTTCCGAGACCTGGGCTGGCAGGACTGGATCATCGCGCCTGAAG
OP4      28         38         48         58         68         78         88

         80         90        100        110        120        130        140
ACTTCGACGCCTACTACTGCTCCGGAGCCTGCCAGTTCCCCTCTGCGGATCACTTCAACAGCACCAACCA
 ** **    *********    **    **    *****           **   ***  *********
GCTACGCGCGCTACTACTGTGAGGGGGAGTGTGCCTTCCCTCTGAACTCCTACATGAACGCCACCAACCA
         98        108        118        128        138        148        158

        150        160        170        180        190        200        210
CGCCGTGGTGCAGACCCTGGTGAACAACATGAACCCCGGCAAGGTACCCAAGCCCTGCTGCGTGCCCACC
****   ******** *****  **  *** *****      *** **************   ******
CGCCATCGTGCAGACGCTGGTCCACTTCATCAACCCGGAAACGGTGCCCAAGCCCTGCTGTGCGCCCACG
        168        178        188        198        208        218        228

        220        230        240        250        260        270        280
GAGCTGTCCGCCATCAGCATGCTGTACCTGGACGAGAATTCCACCGTGGTGCTGAAGAACTACCAGGAGA
 ****    ******      ** ***   ** **    **** ***    ******** ***      *
CAGCTCAATGCCATCTCCGTCCTCTACTTCGATGACAGCTCCAACGTCATCCTGAAGAAATACAGAAACA
        238        248        258        268        278        288        298

        290        300        310
TGACCGTGGTGGGCTGCGGCTGCCGCTAACTGCA
**   **   ** ***  ******* *** **
TGGTGGTCCGGGCCTGTGGCTGCCACTAGCTCCT
        308        318        328
```

Fig. 1B

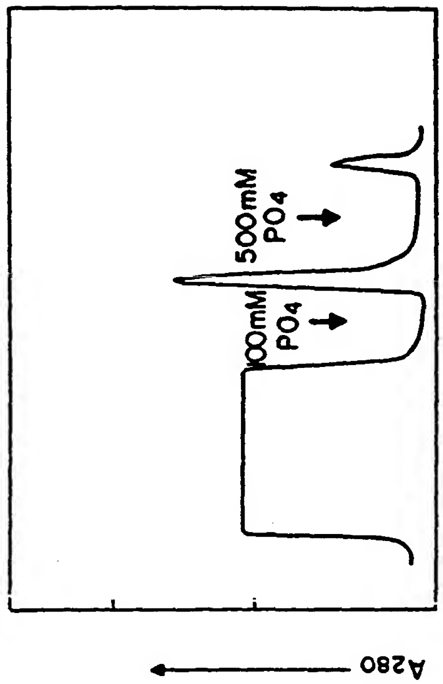


Fig. 2B

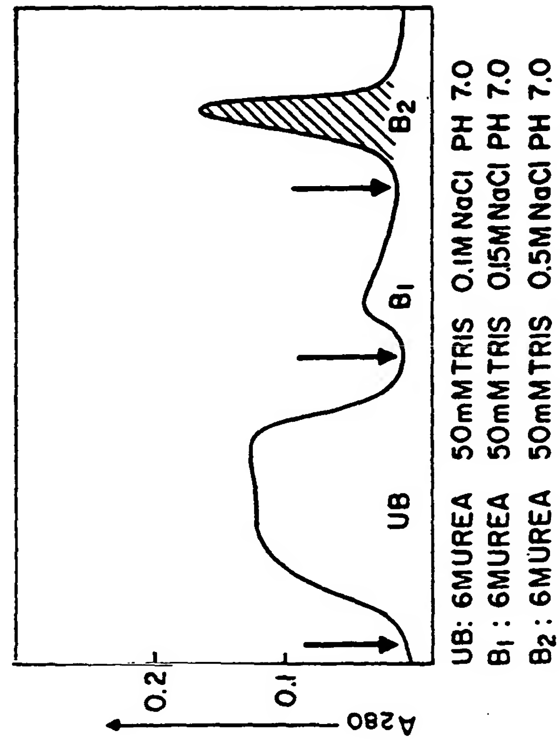


Fig. 2D

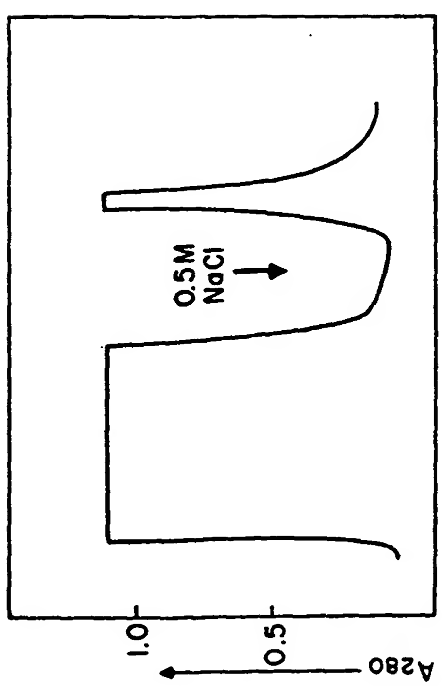


Fig. 2A

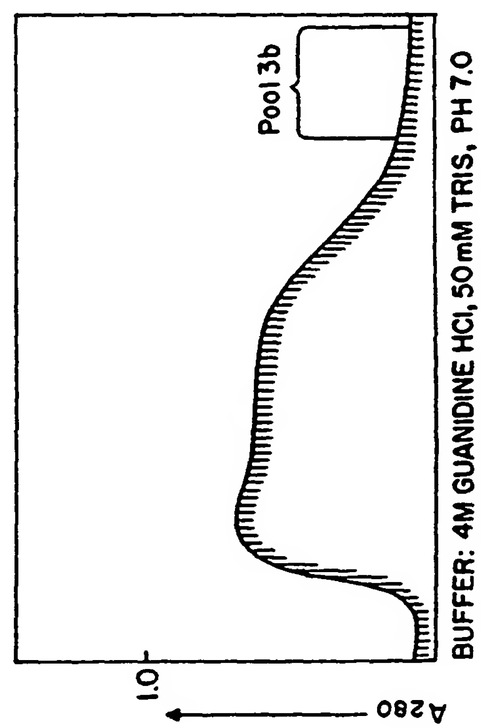


Fig. 2C

Fig. 3A

Fig. 3B

Fig. 4A

Fig. 4B

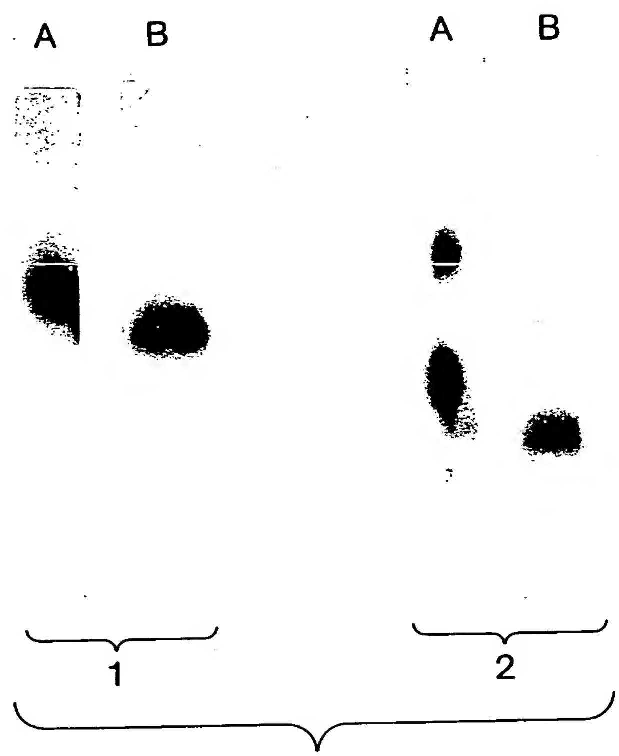


Fig. 5


Fig. 6E


Fig. 6D


Fig. 6C

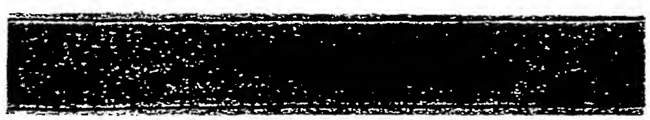


Fig. 6B

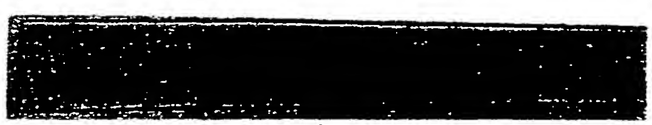


Fig. 6A

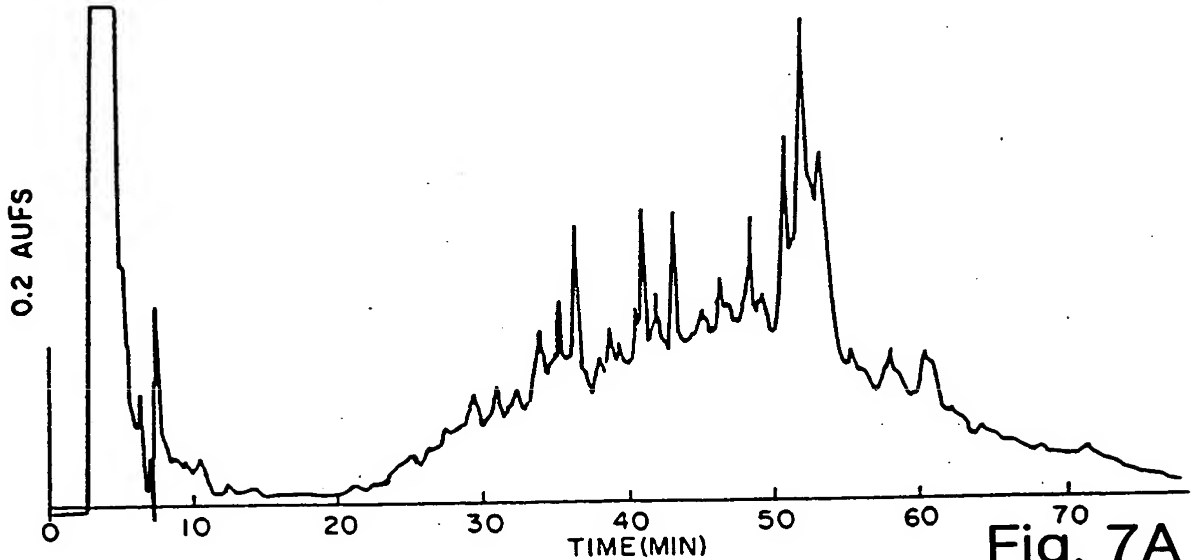


Fig. 7A

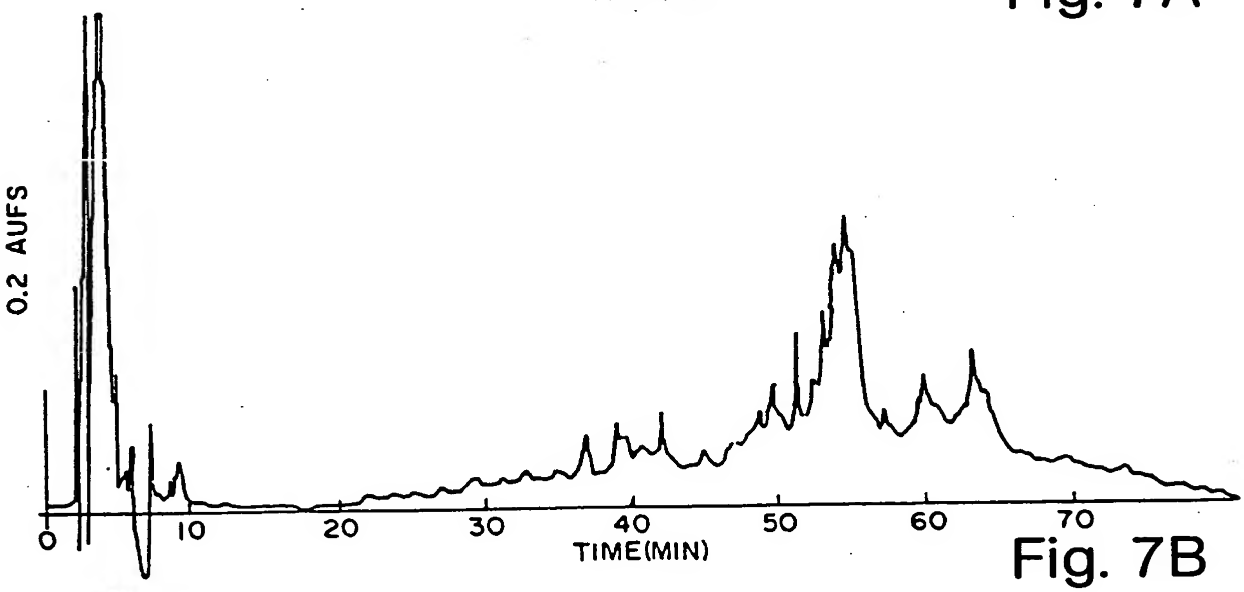


Fig. 7B

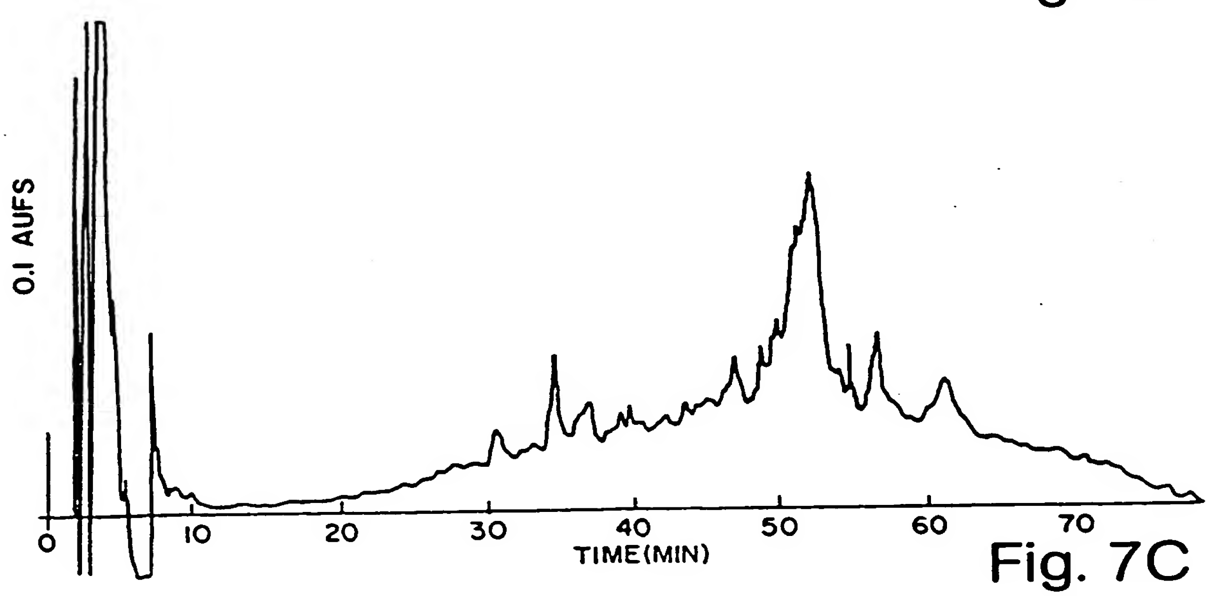


Fig. 7C

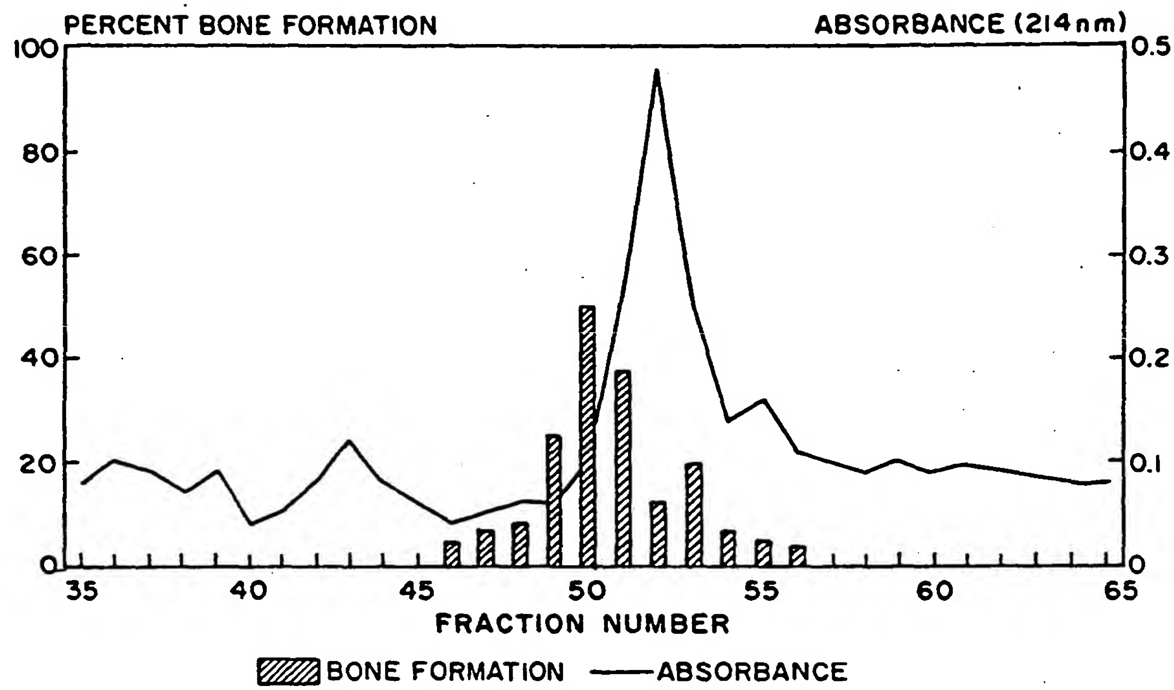

PERCENT BONE FORMATION
ABSORBANCE (214nm)
100
80
60
40
20
0
0.5
0.4
0.3
0.2
0.1
0
35
40
45
50
55
60
65
FRACTION NUMBER
BONE FORMATION
ABSORBANCE

Fig. 8

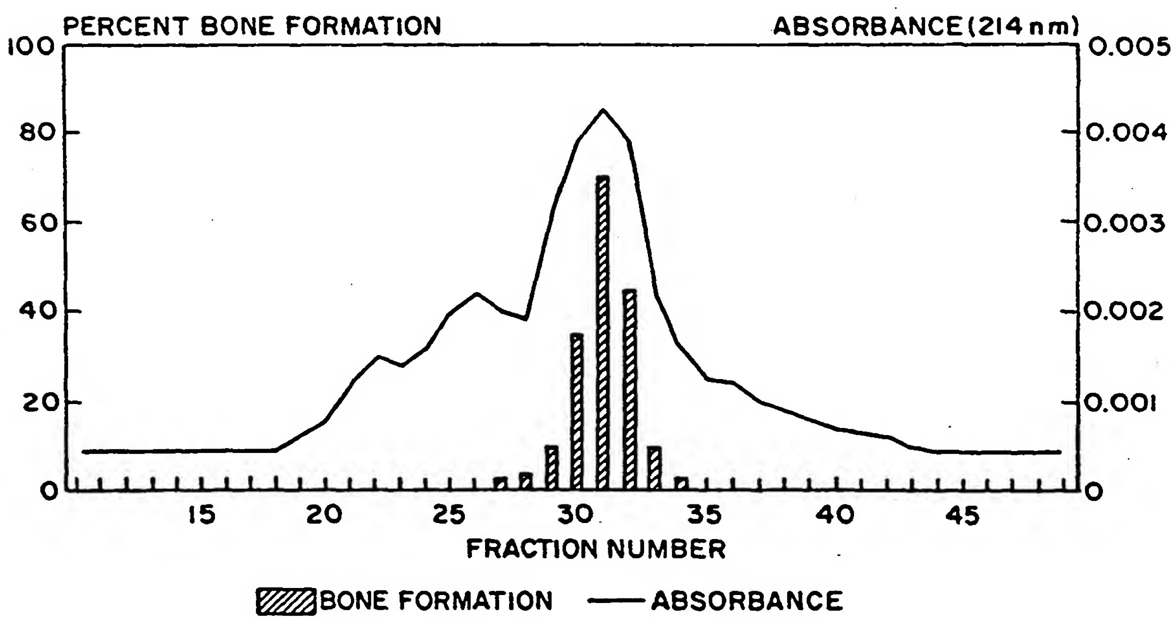

PERCENT BONE FORMATION
ABSORBANCE (214nm)
100
80
60
40
20
0
0.005
0.004
0.003
0.002
0.001
0
15
20
25
30
35
40
45
FRACTION NUMBER
BONE FORMATION
ABSORBANCE

Fig. 9

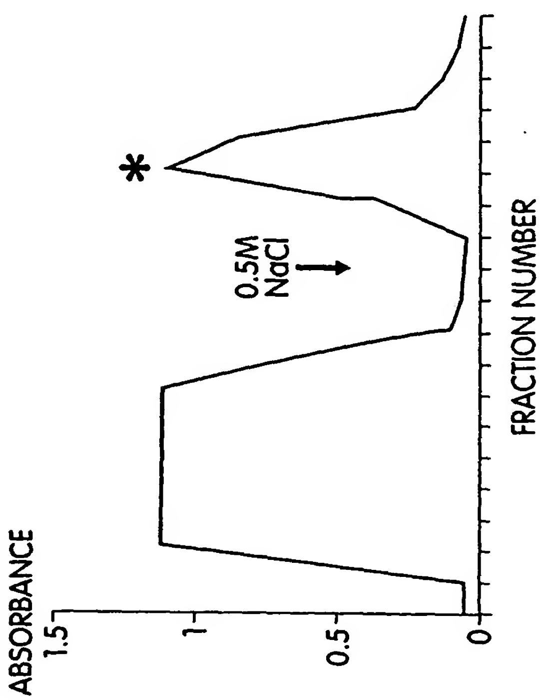


Fig. 10A

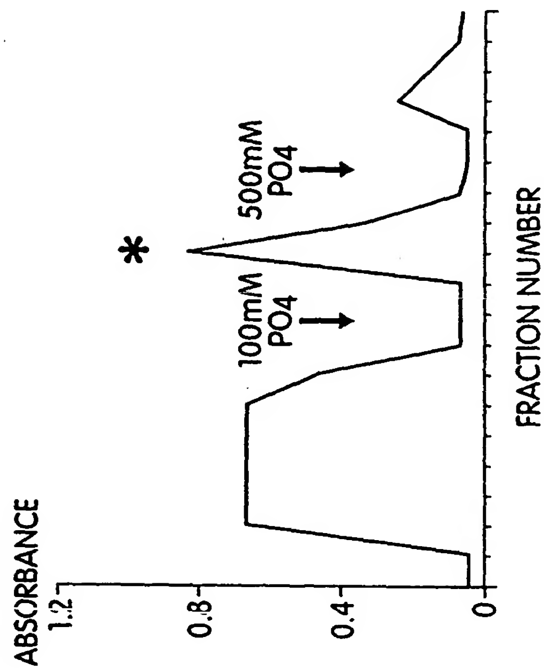


Fig. 10B

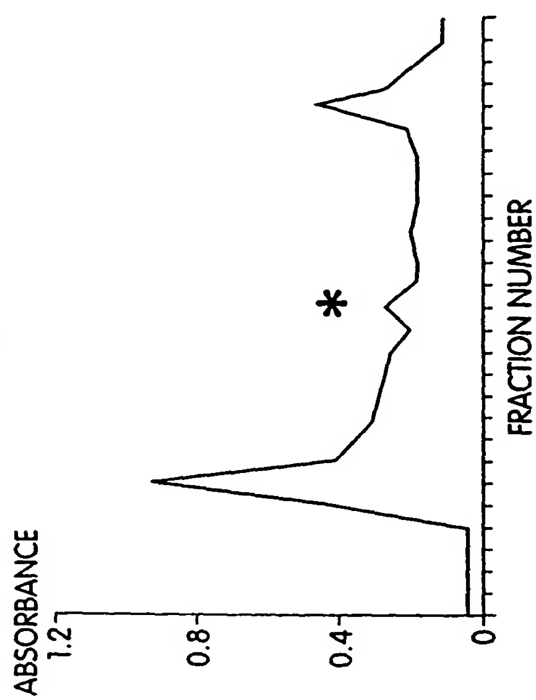


Fig. 10C

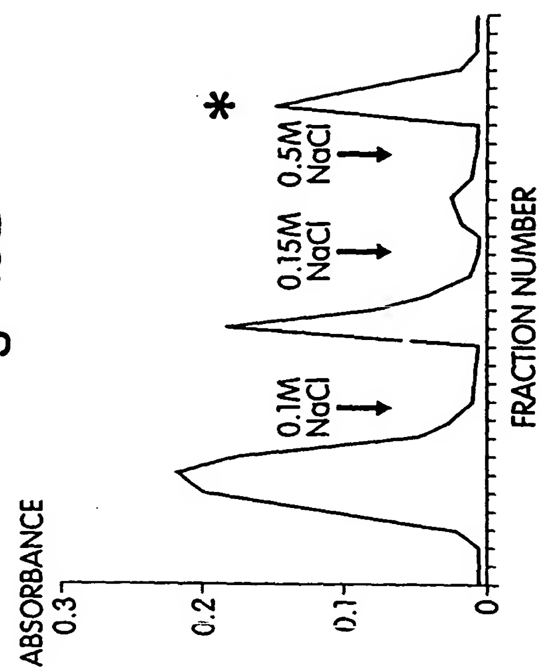


Fig. 10D

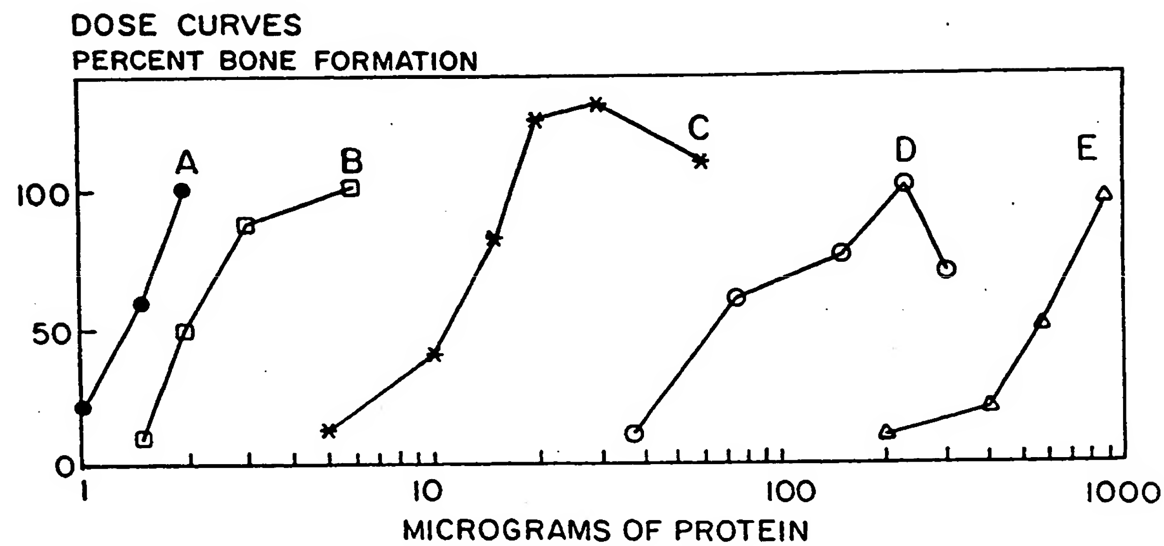

DOSE CURVES
PERCENT BONE FORMATION
A
B
C
D
E
100
50
0
1
10
100
1000
MICROGRAMS OF PROTEIN

Fig. 11

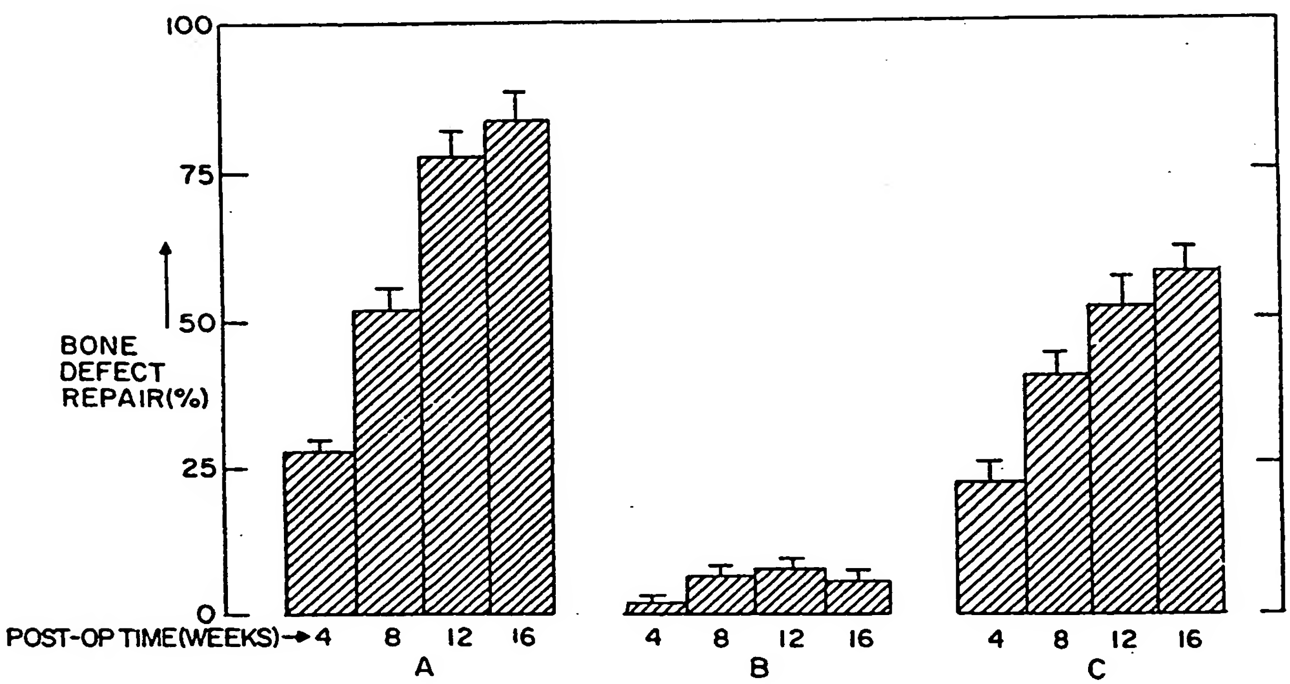

100
75
50
25
0
BONE
DEFECT
REPAIR(%)
POST-OP TIME(WEEKS)→ 4
8
12
16
A
4
8
12
16
B
4
8
12
16
C

Fig. 12

```
         10        20        30        40        50
GATCCTAATGGGCTGTACGTGGACTTCCAGCGCGACGTGGGCTGGGACGA
 D  P  N  G  L  Y  V  D  F  Q  R  D  V  G  W  D  D

         60        70        80        90       100
CTGGATCATCGCCCCCGTCGACTTCGACGCCTACTACTGCTCCGGAGCCT
  W  I  I  A  P  V  D  F  D  A  Y  Y  C  S  G  A

        110       120       130       140       150
GCCAGTTCCCCTCTGCGGATCAATTCAACAGCACCAACCACGCCGTGGTG
C  Q  F  P  S  A  D  H  F  N  S  T  N  H  A  V  V

        160       170       180       190       200
CAGACCCTGGTGAACAACATGAACCCCGGCAAGGTACCCAAGCCCTGCTG
 Q  T  L  V  N  N  M  N  P  G  K  V  P  K  P  C  C

        210       220       230       240       250
CGTGCCCACCGAGCTGTCCGCCATCAGCATGCTGTACCTGGACGAGAATT
  V  P  T  E  L  S  A  I  S  M  L  Y  L  D  E  N

        260       270       280       290       300
CCACCGTGGTGCTGAAGAACTACCAGGAGATGACCGTGGTGGGCTGCGGC
S  T  V  V  L  K  N  Y  Q  E  M  T  V  V  G  C  G

        310
TGCCGCTAACTGCAG
 C  R  *
```

Fig. 13

SDS GEL ELUTION OF OSTEOGENIC ACTIVITY

CALCIUM CONTENT (ug/mg tissue)

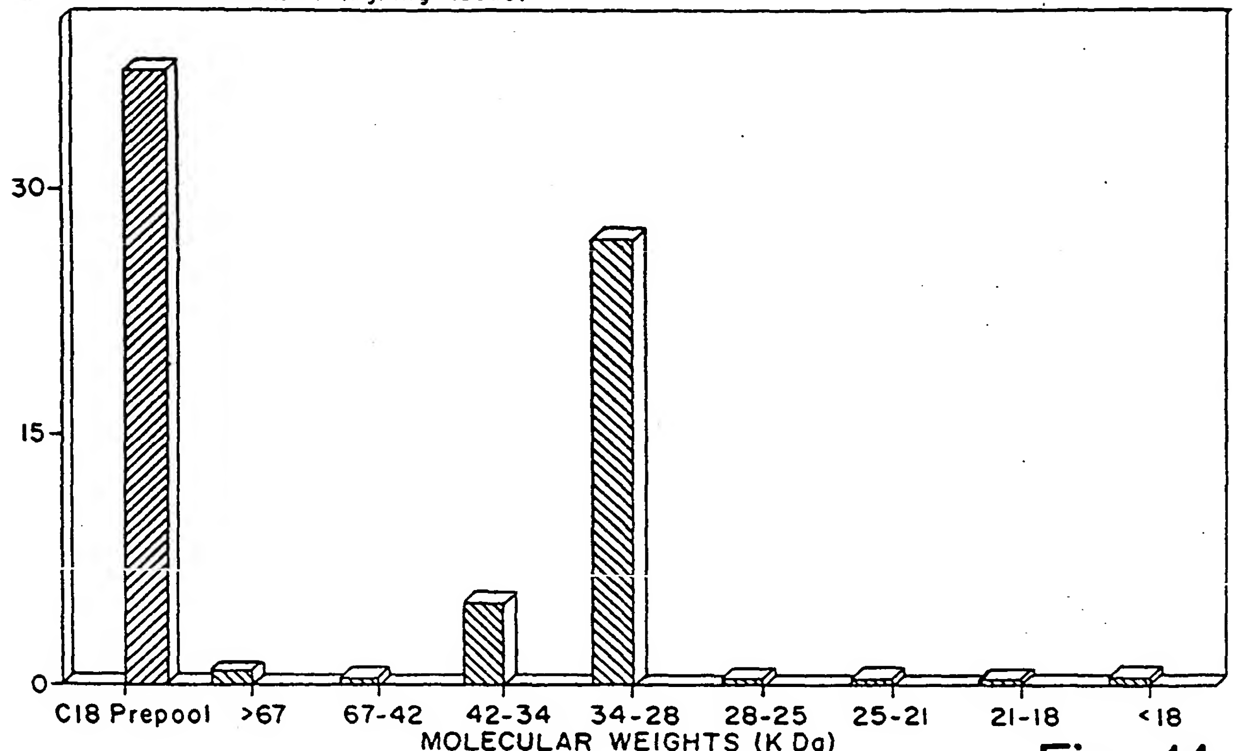


Fig. 14

ALKALINE PHOSPHATASE (U/mg protein)

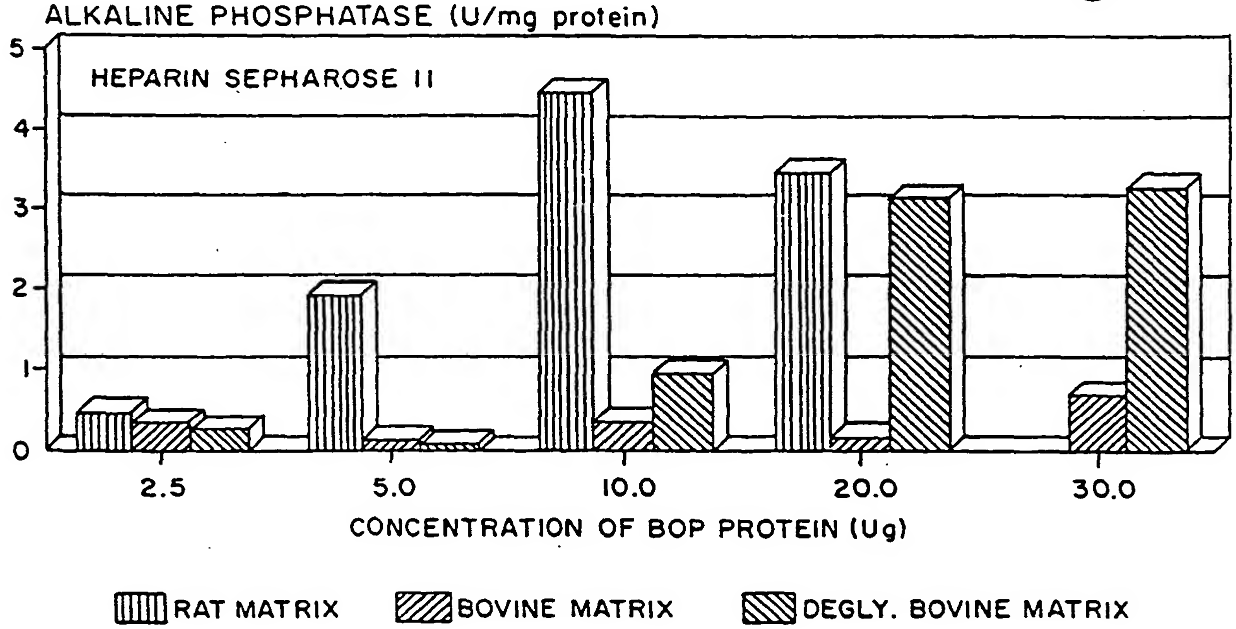


Fig. 19

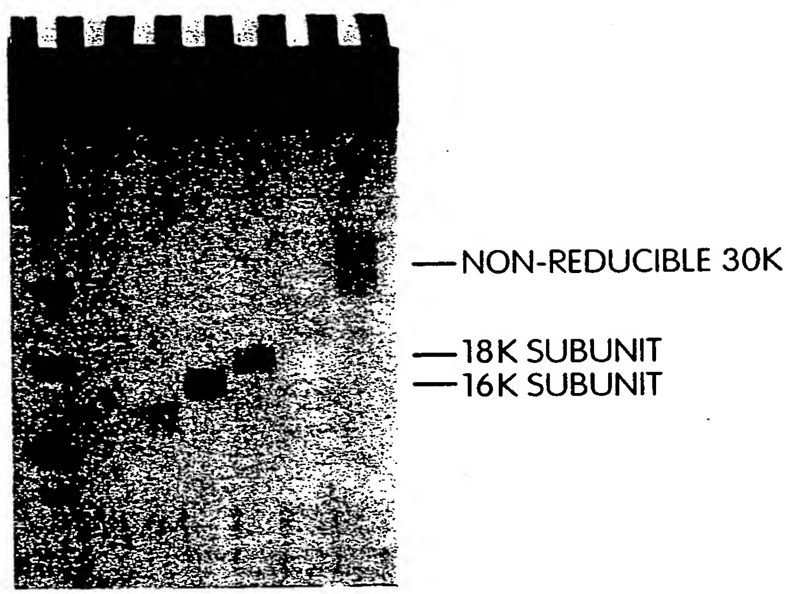


Fig. 15

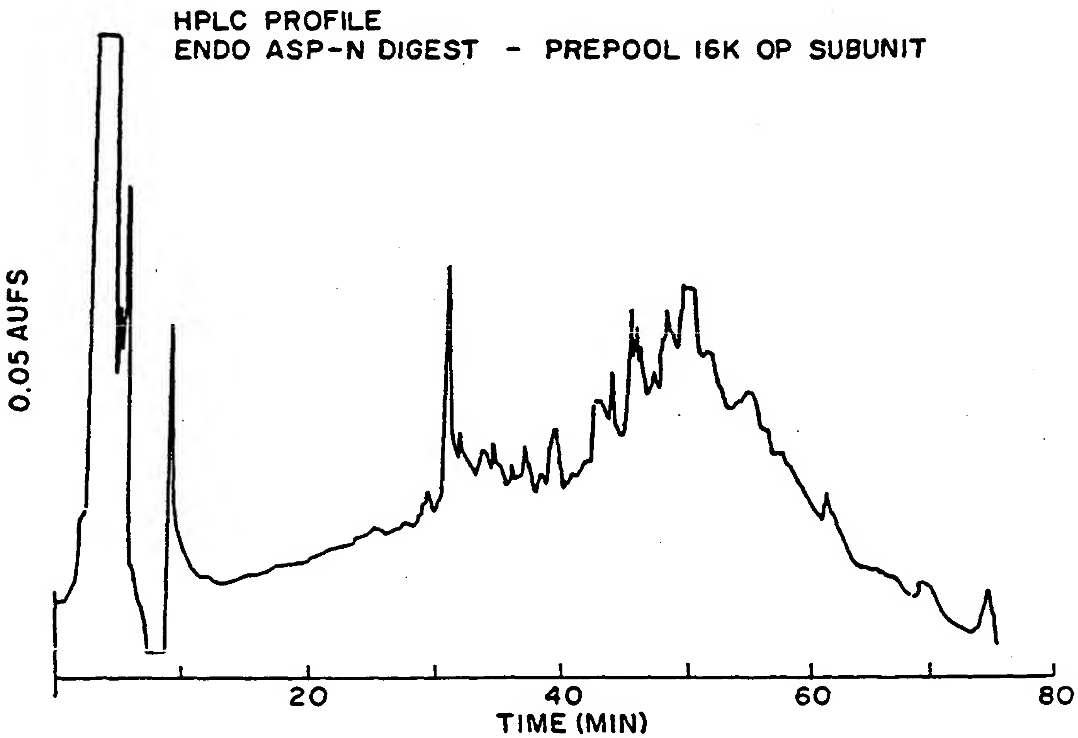


Fig. 16A

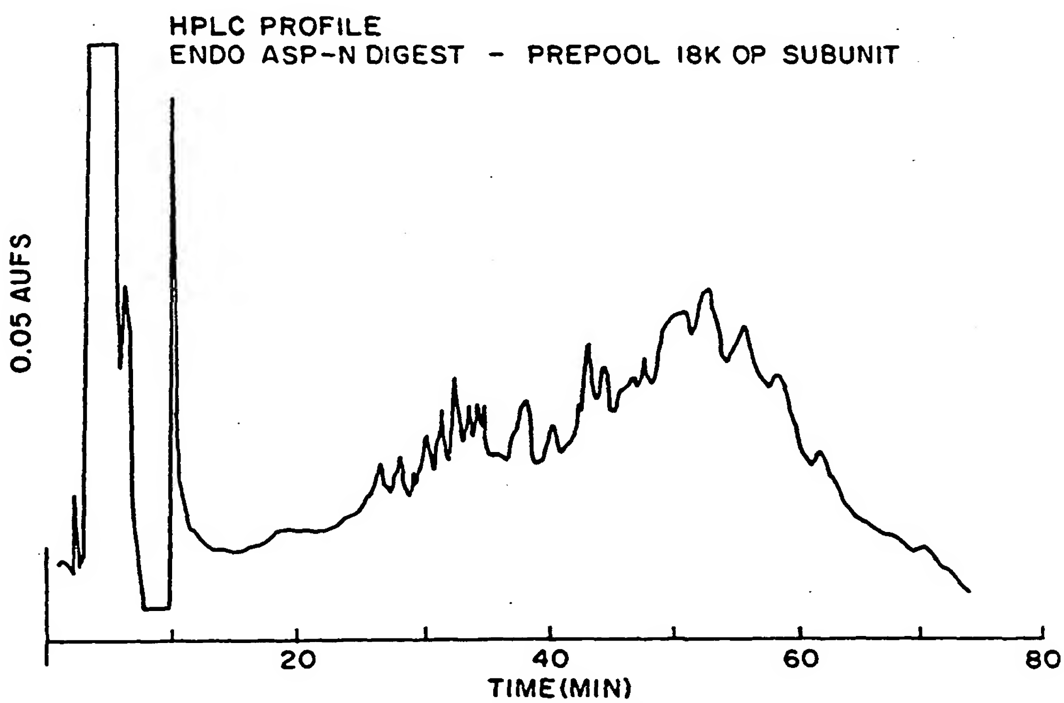


Fig. 16B

Fig. 17A

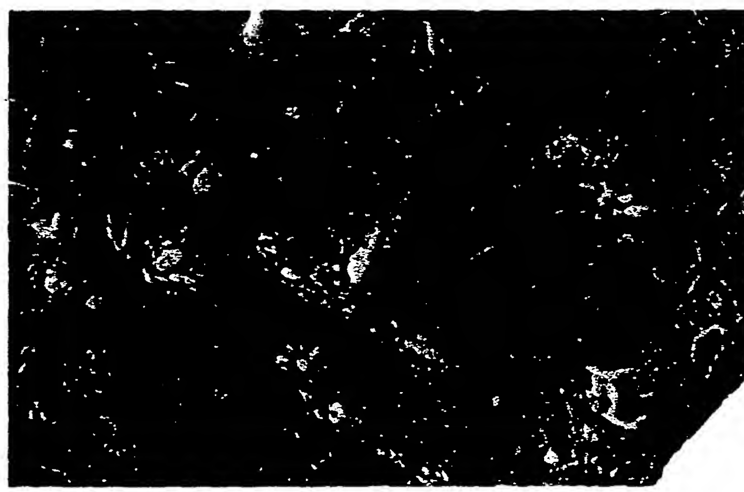


Fig. 17B

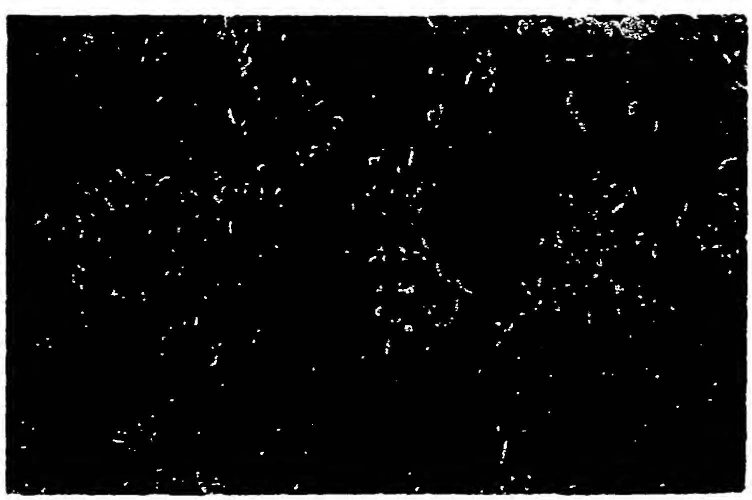


Fig. 17C

Title: Osteogenic Devices
Inventors: Oppermann et al.
Serial No.: Not yet assigned
Atty. Docket No.: STK-010C3
Atty.: Diana M. Steel
Express Mail Mailing Label No.: EV 093438159US

COP1	COP3	COP4	COP5	COP7	VG1	DPP	OP1	CBMP2 a)	CBMP2 b)	CBMP3 (bov)	beta-Inhibin a)	beta-Inhibin b)	TGF-beta 1	TGF-beta 2	TGF-beta 3	MIS	alpha Inhib	consensus choices
					C	C	C	C		C	C	C	C			C	C	c
					K	R	K	K	R	A	C	C	C			A	H	k,r
<P	P	P	P	P>	K	R	K	R		R	K	R	V	L	V	L	R	k,r
<N	N	N	N	N>	R	H	H	H		R	K	Q	R			R	V	h,k,r,q
<G	G	G	G	G>	H	S	E	P	S	Y	Q	Q	Q	P	P	E	A	p,s,e,q
L	L	L	L	L	L	L	L	L		L	F	F	L			L	L	l
Y	Y	Y	Y	Y	Y	Y	Y	Y		K	F	F	Y			S	N	y,f
V	V	V	V	V	V	V	V	V		V	V	I	I			V	I	v,i
D	D	D	D	D	E	D	S	D		D	S	D	D			D	S	d,e,s
F	F	F	F	F	F	F	F	F		F	F	F	F			L	F	f
Q	Q	S	S	S	K	S	R	S		A	K	R	R	K	R	R	Q	k,r,s
R	R												K	R	Q	A		
D	D	D	D	D	D	D	D	D		D	D		D			E	E	d
V	V	V	V	V	V	V	L	V		I	I	I	L			R	L	v,l,i
G	G	G	G	G	G	G	G	G		G	G	G	G			S	G	g
W	W	W	W	W	W	W	W	W		W	W	W	W				W	w
D	D	D	D	N	Q	D	Q	N		S	N	N	K				E	q,n,d,e,s
D	D	D	D	D	N	D	D	D		E	D	D	-				R	d,e,n
W	W	W	W	W	W	W	W	W		W	W	W	W				W	w
I	I	I	I	I	V	I	I	I		I	I	I	I	I	V	V	I	i,v
I	V	V	V	V	I	V	I	V		I	I	I	H			L	V	i,v
A	A	A	A	A	A	A	A	A		S	A	A	E			I	Y	a,s
P	P	P	P	P	P	P	P	P		P	P	P	P			P	P	p
V	P	P	P	P	Q	L	E	P		K	S	T	K			E	P	e,q,p*
D	G	G	G	G	G	G	G	G		S	G	G	G			T	S	g,s
F	Y	Y	Y	Y	Y	Y	Y	Y		F	Y	Y	Y			Y	F	y,f
D	Q	Q	Q	H	M	D	A	H		D	H	Y	H	N	Y	Q	I	h,d,n,q,y*
A	A	A	A	A	A	A	A	A		A	A	G	A			A	F	a

Fig. 18-1

Title: Osteogenic Devices
Inventors: Oppermann et al.
Serial No.: Not yet assigned
Atty. Docket No.: STK-010C3
Atty.: Diana M. Steel
Express Mail Mailing Label No.: EV 093438159US
SHEET 22 OF 30

Y	F	F	F	F	::	N	Y	Y	F	:	Y	N	N	N		:	N	H	::	y,f,n
Y	Y	Y	Y	Y	::	Y	Y	Y	Y	:	Y	Y	Y	F		:	N	Y	::	y,f,n
C	C	C	C	C	::	C	C	C	C	:	C	C	C	C		:	C	C	::	c
S	S	S	H	H	::	Y	H	E	H	:	S	E	E	L	A	S:	Q	H	::	e,h,*
G	G	G	G	G	::	G	G	G	G	:	G	G	G	G		:	G	G	::	g
A	A	A	E	E	::	E	K	E	E	:	A	E	S	P	A	P:	V	G	::	e,a*
C	C	C	C	C	::	C	C	C	C	:	C	C	C	C		:	C	C	::	c
Q	Q	Q	P	P	::	P	P	A	P	:	Q	P	P	P		:	G	G	::	p,a,g,q
F	F	F	F	F	::	Y	F	F	F	:	F	S	A	Y		:	W	L	::	f,y
P	P	P	P	P	::	P	P	P	P	:	P	H	Y	I	L	L:	P	H	::	p
S	S	S	L	L	::	L	L	L	L	:	M	I	L	W	W	R:	Q	I	::	l,m,i
A	A	A	A	A	::	T	A	N	A	:	P	A	A	S		:	S	P	::	p,a,s,t
D	D	D	D	D	::	E	D	S	D	:	K	G	G			:	D	P	::	d,e,s,g*
H	H	H	H	H	::	I	H	Y	H	:	S	T	V	L		:	R	N	::	h,r,n, s*
F	F	F	F	L	::	L	F	M	L	:	L	S	P	L	S	A:		L	::	m,l,f,p,sa
N	N	N	N	N	::	N	N	N	N	:	K	G	G	D		:	N	S	::	n,k
S	S	S	S	S	::	G	S	A	S	:	P	S	S			:	P	L	::	s,a,p,g
T	T	T	T	T	::	S	T	T	T	:	S	S	A	T		:	R	P	::	t,s,a
N	N	N	N	N	::	N	N	N	N	:	N	L	S	Q	Q	T:	Y	V	::	n
					::					:		S	S			:	G	P	::	
					::					:		F	F			:	N	G	::	
H	H	H	H	H	::	H	H	H	H	:	H	H	H	Y	H	H:	H	A	::	h
					::					:		S	T			:			::	
A	A	A	A	A	::	A	A	A	A	:	A	T	A	S		:		P	::	a,t,s
V	V	V	V	V	::	I	V	I	I	:	T	V	V	K	R	T:	V	P	::	i,v,t
V	V	V	V	V	::	L	V	V	V	:	I	I	V	V		:	V	T	::	v,i,l
Q	Q	Q	Q	Q	::	Q	Q	Q	Q	:	Q	N	N	L		:	L	P	::	q,n
T	T	T	T	T	::	T	T	T	T	:	S	H	Q	A	S	G:	L	A	::	t, s,a,g
L	L	L	L	L	::	L	L	L	L	:	I	Y	Y	L		:	L	Q	::	l,i
V	V	V	V	V	::	V	V	V	V	:	V	R	R	Y		:	K	P	::	v
N	N	N	N	N	::	H	N	H	N	:	R	M	M	N		:	M	Y	::	h,n r

Fig. 18-2

N	N	N	S	S	::	S	N	F	S		:	A	R	R	Q	T	T:	Q	S	::	n,s *
M	M	M	V	V	::	I	N	I	V		:	V	G	G	H	I	L:	A	L	::	i,v,l,
N	N	N	N	N	::	E	N	N	N		:	G	H	L	N		:	R	L	::	n
					::						:	V	S	N			:	G		::	
					::						:	V					:	A		::	
P	P	P	S	S	::	P	P	P	S		:	P	P	P	P		:	A	P	::	p,s,a
G	G	G			::	E	G	E			:	G	F	G	G	E	E:	L	G	::	g,e
					::						:		A	T	A		:	A		::	
K	K	K	K	K	::	Q	K	T	K	S	:		N	K	S		:	R		::	k,q,t,s
V	V	V	I	I	::	I	V	V	I		:	I	L	V	A		:			::	i,v,l
P	P	P	P	P	::	P	P	P	P		:	P			A	S	S:	P	A	::	p,a,s
K	K	K	K	K	::	L	K	K	K		:	E	K	N			:		Q	::	k
P	P	P	A	A	::	P	A	A	A		:	P	S	S	P		:	P	P	::	a,p,s
C	C	C	C	C	::	C	C	C	C		:	C	C	C	C		:	C	C	::	c
C	C	C	C	C	::	C	C	C	C		:	C	C	C	C		:	C	C	::	c
V	V	V	V	V	::	V	V	A	V		:	V	V	I	V		:	V	A	::	v,a,i
P	P	P	P	P	::	P	P	P	P		:	P	P	P	P	S	P:	P	A	::	p,s,a
T	T	T	T	T	::	T	T	T	T		:	E	T	T	Q		:	T	L	::	t,e,q
E	E	E	E	E	::	K	Q	Q	E		:	K	K	K	A	D	D:	A	P	::	q,e,d,k*
L	L	L	L	L	::	M	L	L	L		:	M	L	L	L		:	Y	G	::	l,m
S	S	S	S	S	::	S	D	N	S		:	S	R	S	E		:	A	T	::	s,n e,d
A	A	A	A	A	::	P	S	A	A		:	S	P	T	P		:	G	M	::	a,s,p,t
I	I	I	I	I	::	I	V	I	I		:	L	M	M	L		:	K	R	::	i,l,m,v
S	S	S	S	S	::	S	A	S	S		:	S	S	S	P	T	T:	L	P	::	s,a,p,t
M	M	M	M	M	::	M	M	V	M		:	I	M	M	I		:	L	L	::	v,m,i,l
L	L	L	L	L	::	L	L	L	L		:	L	L	L	V	L	L:	I	H	::	l,v,i
Y	Y	Y	Y	Y	::	F	Y	Y	Y		:	F	Y	Y	Y		:	S	V	::	y,f
L	L	L	L	L	::	Y	L	F	L		:	F	Y	F	Y		:	L	R	::	f,l,y
D	D	D	D	D	::	D	N	D	D		:	D	D	D	V	I	V:	S	T	::	d,n
E	E	E	E	E	::	N	D	D	E		:	E	D	D	G		:	E	T	::	d,e,
N	N	N	N	N	::	N	Q	S	N	Y	:	N	G	E	R	K	R:	E	S	::	n,q,y*
E	E	E	E	E	::	D	S	S	E	D	:	K	Q	Y	K	T	T:	R	D	::	e,d,s,t

Fig. 18-3

K	K	K	K	K	::	N	T	N	K		:	N	N	N	P			:	I	G	::	n,k
V	V	V	V	V	::	V	V	V	V		:	V	I	I	K			:	S	G	::	v,i
V	V	V	V	V	::	V	V	I	V		:	V	I	V	V	I	V	:	A	Y	::	v,i
L	L	L	L	L	::	L	L	L	L		:	L	K	K	E			:	H	S	::	l
K	K	K	K	K	::	R	K	K	K		:	K	K	R	Q			:	H	F	::	k,r
N	N	N	N	N	::	H	N	K	N		:	V	D	D	L			:	V	K	::	n,d,k*
Y	Y	Y	Y	Y	::	Y	Y	Y	Y		:	Y	I	V				:		Y	::	y
Q	Q	Q	Q	Q	::	E	Q	R	Q		:	P	Q	P	S			:	P	E	::	q,e,p,r
					::						:							:		TVP	::	
E	E	E	E	E	::	N	E	N	D	E	:	N	N	N	N			:	N	N	::	n,d,e
M	M	M	M	M	::	M	M	M	M		:	M	M	M	M			:	M	L	::	m
V	V	V	V	V	::	A	T	V	V		:	T	I	I	I	I	V	:	V	L	::	v,i,t,a
V	V	V	V	V	::	V	V	V	V		:	V	V	V	V			:	A	T	::	v
E	E	E	E	E	::	D	V	R	E		:	E	E	E	R	K	K	:	T	Q	::	e,d,r,k,
G	G	G	G	G	::	E	G	A	G		:	S	E	E	S			:	E	H	::	g,a,s,e
C	C	C	C	C	::	C	C	C	C		:	C	C	C	C			:	C	C	::	c
G	G	G	G	G	::	G	G	G	G		:	H	G	G	K			:	G	A	::	g,h
C	C	C	C	C	::	C	C	C	C		:	C	C	C	C			:	C	C	::	c
R	R	R	R	R	::	R	R	H	R		:	R	S	A	S			:	R	I	::	r,h,s,a,

Fig. 18-4

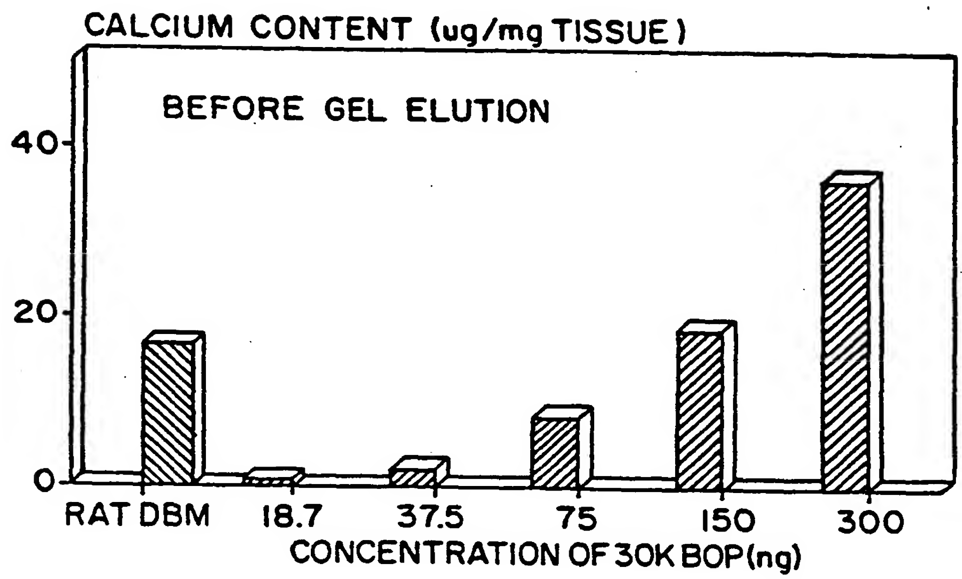


Fig. 20A

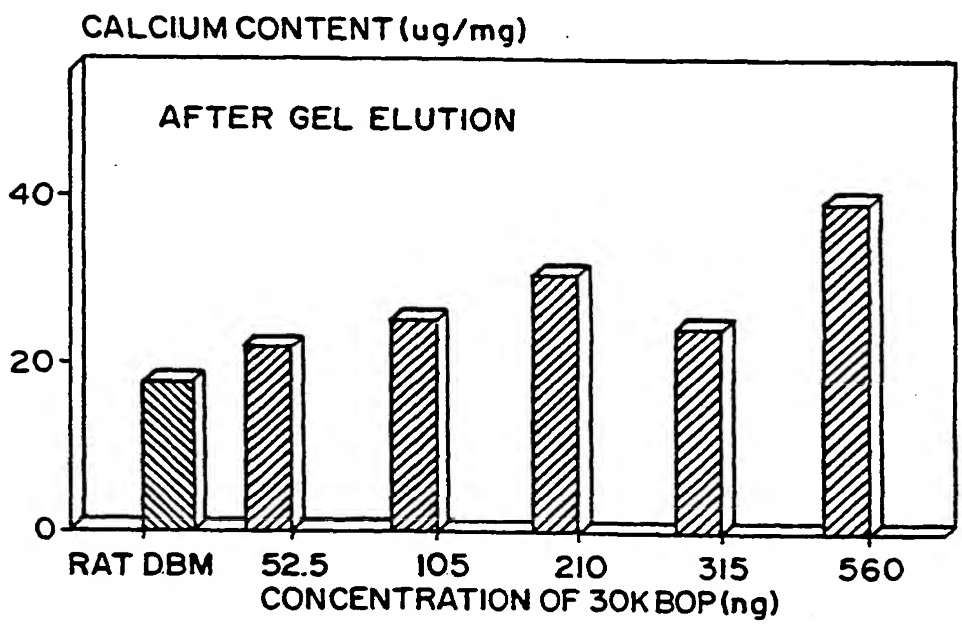
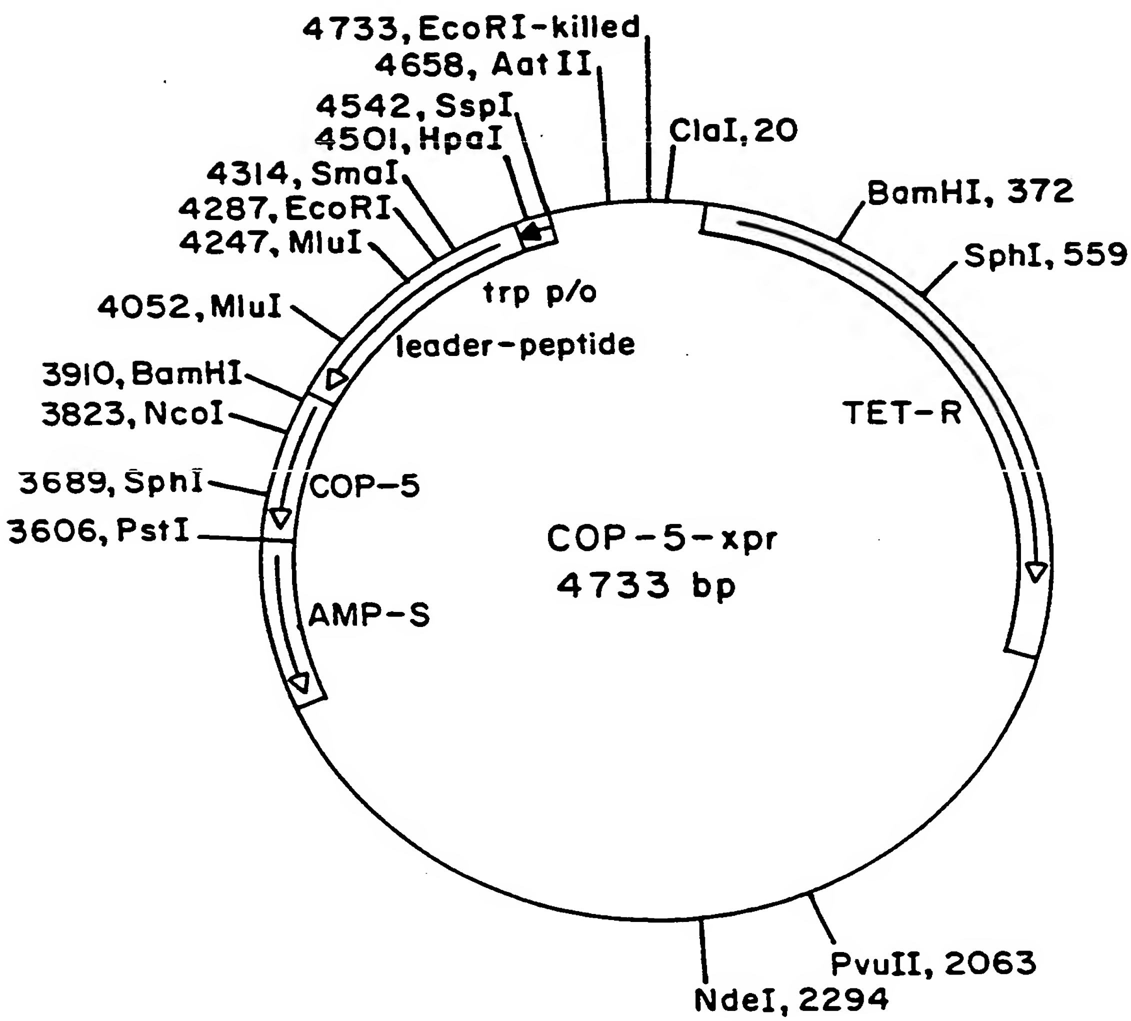


Fig. 20B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4658, Aat II
4542, SspI
4501, HpaI
4314, SmaI
4287, EcoRI
4247, MluI
4052, MluI
3910, BamHI
3823, NcoI
3689, SphI
3606, PstI
ClaI, 20
BamHI, 372
SphI, 559
trp p/o
leader-peptide
COP-5
AMP-S
TET-R
COP-5-xpr
4733 bp
PvuII, 2063
NdeI, 2294

Fig. 21A

COP-5 fusion protein

```
       10        20        30        40        50
ATGAAAGCAATTTTCGTACTGAAAGGTTCACTGGACAGAGATCTGGACTC
 M  K  A  I  F  V  L  K  G  S  L  D  R  D  L  D  S
                                      BglII

       60        70        80        90       100
TCGTCTGGATCTGGACGTTCGTACCGACCACAAAGACCTGTCTGATCACC
  R  L  D  L  D  V  R  T  D  H  K  D  L  S  D  H

      110       120       130       140       150
TGGTTCTGGTCGACCTGGCTCGTAACGACCTGGCTCGTATCGTTACTCCC
L  V  L  V  D  L  A  R  N  D  L  A  R  I  V  T  P
       SalI                                     Sma

      160       170       180       190       200
GGGTCTCGTTACGTTGCGGATCTGGAATTCATGGCTGACAACAAATTCAA
 G  S  R  Y  V  A  D  L  E  F  M  A  D  N  K  F  N
I                          EcoRI

      210       220       230       240       250
CAAGGAACAGCAGAACGCGTTCTACGAGATCTTGCACCTGCCGAACCTGA
  K  E  Q  Q  N  A  F  Y  E  I  L  H  L  P  N  L
               MluI        BglII     BspMI+

      260       270       280       290       300
ACGAAGAGCAGCGTAACGGCTTCATCCAAAGCTTGAAGGATGAGCCCTCT
N  E  E  Q  R  N  G  F  I  Q  S  L  K  D  E  P  S
                            HindIII

      310       320       330       340       350
CAGTCTGCGAATCTGCTAGCGGATGCCAAGAAACTGAACGATGCGCAGGC
 Q  S  A  N  L  L  A  D  A  K  K  L  N  D  A  Q  A
               NheI                         FspI

      360       370       380       390       400
ACCGAAATCGGATCAGGGGCAATTCATGGCTGACAACAAATTCAACAAGG
  P  K  S  D  Q  G  Q  F  M  A  D  N  K  F  N  K

      410       420       430       440       450
AACAGCAGAACGCGTTCTACGAGATCTTGCACCTGCCGAACCTGAACGAA
E  Q  Q  N  A  F  Y  E  I  L  H  L  P  N  L  N  E
      MluI        BglII     BspMI+

      460       470       480       490       500
GAGCAGCGTAACGGCTTCATCCAAAGCTTGAAGGATGAGCCCTCTCAGTC
 E  Q  R  N  G  F  I  Q  S  L  K  D  E  P  S  Q  S
                       HindIII
```

Fig. 21B-1

```
         510         520         530         540         550
TGCGAATCTGCTAGCGGATGCCAAGAAACTGAACGATGCGCAGGCACCGA
 A  N  L  L  A  D  A  K  K  L  N  D  A  Q  A  P
     NheI                                FspI

         560         570         580         590         600
AGGATCCTAATGGGCTGTACGTCGACTTCAGCGACGTGGGCTGGGACGAC
K  D  P  N  G  L  Y  V  D  F  S  D  V  G  W  D  D
 BamHI              SalI

         610         620         630         640         650
TGGATTGTGGCCCCACCAGGCTACCAGGCCTTCTACTGCCATGGCGAATG
 W  I  V  A  P  P  G  Y  Q  A  F  Y  C  H  G  E  C
                          StuI          NcoI    BsmI+

         660         670         680         690         700
CCCTTTCCCGCTAGCGGATCACTTCAACAGCACCAACCACGCCGTGGTGC
 P  F  P  L  A  D  H  F  N  S  T  N  H  A  V  V
     NheI                                DraIII
                                        PflMI

         710         720         730         740         750
AGACCCTGGTGAACTCTGTCAACTCCAAGATCCCTAAGGCTTGCTGCGTG
Q  T  L  V  N  S  V  N  S  K  I  P  K  A  C  C  V
                                    MSTII

         760         770         780         790         800
CCCACCGAGCTGTCCGCCATCAGCATGCTGTACCTGGACGAGAATGAGAA
 P  T  E  L  S  A  I  S  M  L  Y  L  D  E  N  E  K
                     SphI

         810         820         830         840         850
GGTGGTGCTGAAGAACTACCAGGAGATGGTAGTAGAGGGCTGCGGCTGCC
 V  V  L  K  N  Y  Q  E  M  V  V  E  G  C  G  C
                 PflMI

         860
GCTAACTGCAG
R  *
   PstI
```

Fig. 21B-2

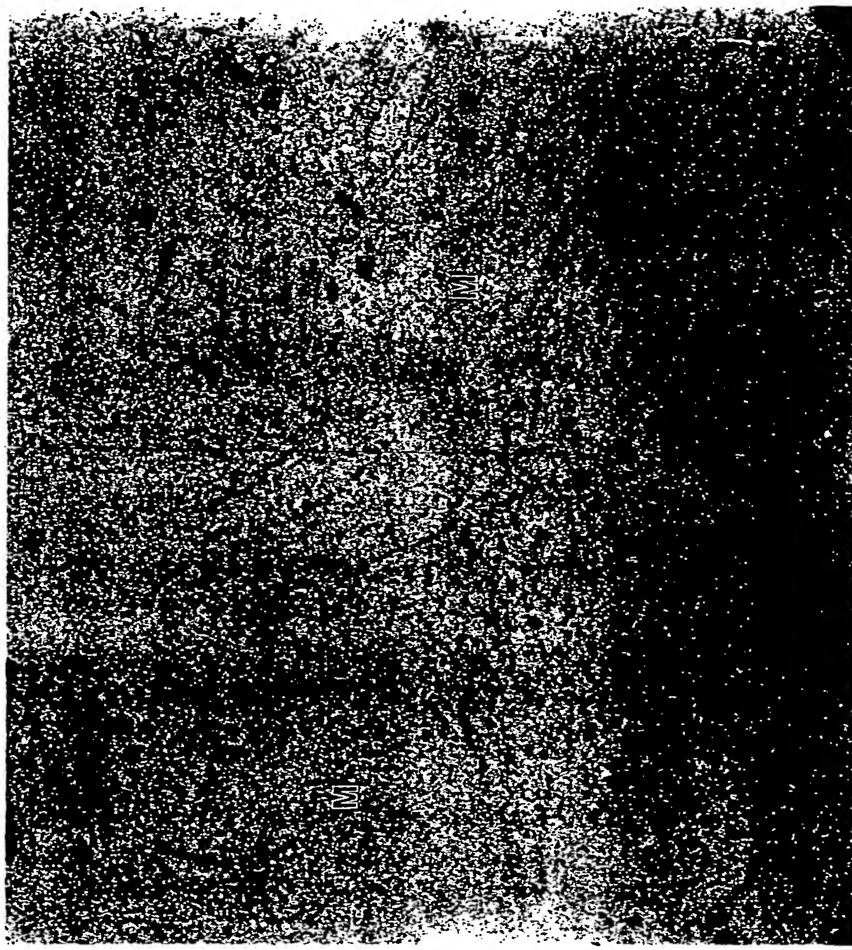

Fig. 22A

Fig. 22B